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ABSTRACT

A description of rural school context variables for successful staff development and an empirical study of large-scale rural intervention are presented in this report. Drawing from research, literature, and practice based on nonrural populations, context variables are identified for implementing effective staff development intervention in rural schools. Document analysis, interviews, and observation were used to study 28 rural schools in 5 states--Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. Stepwise regression was used to identify eight predictor variables for successful staff development, which include training time; socioeconomic profile of the student body; administrative participation; proximity to a higher education institution; provision of incentive; number of high school level teachers; number of administrators in the district; and presence of a trainer from a higher education institution. Three figures are included. (30 references) (LMI)

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# CONTEXT VARIABLES FOR SUCCESSFUL STAFF DEVELOPMENT IN RURAL SCHOOLS

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Abstract

The purposes of this study were to provide a predictable description of rural school context variables that support staff development for school improvement and to provide an empirical study of a large scale rural intervention. Drawing from research, literature, and practice based on nonrural populations and locations, this research sought to verify or define contextual variables in diverse rural schools representing a broad spectrum of types and populations so that context found to be most supportive to a staff development intervention for improvement could be described. Four basic types of data were collected and used in this study: archival, perceptual, behavioral, and observational.

This research can also provide a basic foundation for developing similar interventions that can be used to assist rural schools in face of the triple threats of shrinking resources, increasing at risk populations, and increased external mandates for improved and expanded services.

# CREATING A CONTEXT FOR SUCCESSFUL STAFF DEVELOPMENT:

# INTERVENTION IN RURAL SCHOOLS

## *Introduction*

Effective staff development has always been a critical function of educational agencies, local to national, urban, suburban, and rural. In light of recent reform movements and mandates demanding improvement, the need for efficient, effective staff development has increased dramatically in rural areas that frequently face teacher shortages and difficult competition with their urban and suburban counterparts in the teacher market. The scantness of research studies on staff development in rural schools in data banks is only one dimension of the problem of locating sufficient, relevant information. Another complicating factor is that most school data are not labeled by rurality but rather by size in terms of student population. Frequently what is small in the research is not rural; therefore, when looking for data by school populations, identification is problematic. The research that does exist in this area seems to be unified in touting the importance of further qualitative and extensive study of staff development in rural contexts (Peter, 1989; Wood and Klein, 1987).

Most current research on effective schools, effective teaching practices, excellence efforts, cognitive development, change theory, and staff development has been focused on city schools. With over 1,300 rural school districts in the Southwestern region, serving one-third of the student population of that area, definitive research is needed to provide a basis for improvement in those diverse, frequently resource-bound schools. Context variables that support rural school improvement efforts must be defined by qualitative research that considers the diverse natures/cultures of those to provide assistance with current school improvement efforts. By examining contextual variables of interventions, predictions for conditions supportive to other successful improvement efforts can be made. Many rural populations are suffering educational disadvantages, and most rural districts face immediate dilemmas as a result of either mandated improvement efforts/changes or economic pressures (Nachtigal, 1982). The most direct way for school improvement to occur is at the classroom level; therefore, improved teaching that can be accomplished effectively, efficiently, and permanently holds great promise for solutions to improved educational effectiveness.



Empirical research on rural education is limited mainly to pre-1970, pre-reform legislation, pre-technology focus, pre-demographic shift, and pre

agricultural decline. Additionally, during the most recent tide of educational reform and improvement, generically affecting all schools, little has been done in the area of rural research (DeYoung, 1987 and Wood & Kleine, 1987). Effective school research, teacher effectiveness studies, and staff development innovations have concentrated on large districts. Before the 1986 Congressional rural initiative, the focus of research, assistance, resources, and funds had been on urban centers, evidenced by the list of schools studied in the publication of the most recent Carnegie report, An Imperiled Generation (1988). The substantial body of educational research produced during recent years has neglected rural schools, almost none occurring in the Southwest, even though these rural, small schools face the same reform mandates, societal pressures, and shrinking resources that urban schools do. Rural schools, isolated and ignored by researchers for many years, have now garnered some attention and have an urgent need for research so that the desire/required innovations or interventions can be effectuated. The analysis of a large scale rural intervention in the Southwest done here intends to provide that needed understanding, providing in small measure basic empirical research to measure, define, describe, qualify, and design approaches useful for rural school assistance. Predictors or correlates need to be identified to show what combination of variables contribute most to teacher use (classroom implementation) of research-based and proven craft-based strategies in rural classrooms for school improvement.

This study examines a systematically delivered rural staff development intervention in twenty-eight rural schools in 5 states representative of the Southwest---Arkansas, Louisiana, Oklahoma, New Mexico, and Texas. Involving 700 teachers, the analysis of 463 participants with 24 data sets (49 separate vectors used for the various levels within the qualitative variables treated individually) provides a predictor model of context variables that indicate significant support of implementation of the strategies targeted for training.

To assist rural schools in their efforts to improve instruction through staff development, an effort is being made in this study to predict and describe context variables that are supportive to staff development interventions. If, as some rural research suggests, strategies for improving small. rural schools must be different than those for non-rural schools, those differences need to be delineated and documented (Helge, 1984).

*Background*



From several recent surveys of rural research, DeYoung's statement seems best to convey the general picture of that arena when he notes, "Most rural education specialists writing in the area seem in agreement that no one knows much about

what works in rural education" (1987, p. 137). Rather than suggesting a research agenda, DeYoung concludes his commentary on the status of rural education research by reaffirming that diversity, uneven quality, and mixed agendas undergird what research exists, and, offers his work as a resource to those pursuing the endeavor further. In 1983, of the nine most pressing questions drawn from a poll of the research committee and executive board members of the Rural Education Association, staff development and professional support surfaced as priorities (Barker & Muse, 1983). Rural educators queried two years later rated staff training needs among the top eight clusters of 46 items (Helge, 1985). Staff development and inservice were among the top five concerns in the Arends survey (1987). An underlying assumption is that when staff development is effective, change will occur (DuFour & Eaker, 1988); therefore, an understanding of change and how change is fostered is an important area for investigation.

*Change and Improvement in Rural Settings*

The two ideas that "bigger is better" and that there is "one best model" are quickly losing favor as educators discover that curvelinear relations to size apply to schools and that diverse cultural organizations and individuals need diverse treatments (Nachtigal, 1982). These revelations hold great promise for rural schools in an age that is leaving behind the necessity of centralization brought on by industrialization, mass production, and the notions surrounding site-based management. As the information and service age emerges, the rural arena, that includes two thirds of all schools districts and approximately one third of the classroom teachers in the public schools of the nation, may offer the best solutions for accommodating both diverse and multi-option social and economic possibilities (National Center for Educational Statistics, 1980). Considering that rural schools hold this promise to the American society is a positive way to approach the challenge of enabling those schools to improve and become more effective, rather than holding on to the deficit model attitude that improvement is aimed at bringing them "up to standard." Regardless of the perspective for change, effective ways for designing and managing that change are necessary.

A number of variables have been identified as having influence over change in rural schools. Most concisely put by Herriott (1980), these characteristics include: 1) tension between stability and change in the community; 2) the multiple functions that rural schools perform; 3) the population density, size, geographic dispersion of the district; 4) consolidation circumstances and recentness; 5) economic base (limited and/or precarious); 6) fear of federal control (colonialism); 7) the heterogeneous nature of the district population; 8) reservations held by community regarding educators' professional license; and 9) the shifting balance of authority/power among school boards, administration and teachers.

Trends in the research on change have shifted from a focus on dissemination and adoption of the change toward an emphasis on implementation of the intervention (Berman, 1981). At the same time, literature on rural schools indicates that the aspect of change currently receiving the most attention is the lack of opportunity for professional development of teachers (Baker & Ambrose, 1985; Fullen, 1986; Massey & Crosby, 1983; Putnam, 1986; SEDL, 1985; Sher, 1983b). Considering the two preceding facts, one might conclude that the implementation of a rural staff development innovation has significance to both directions of research.

The key to quality rural education and to making a delivery system work is the local teacher (Sher, 1983a). Staff development for individual teachers has been shown to have little impact on school improvement. On the other hand, group efforts have positive results (Joyce & Showers, 1988). A rural Vermont research-based innovation targeted groups of educators within the school where continuously maintained records indicated that an instructional improvement effort, mainly presented by the public school staff through team training, was both effective and lasting ("Ideas that Work," New York State College, no date).

Three major staff development difficulties in rural schools are summarized by Lundsgaard (1983) as: (1) no full time personnel for staff development; (2) problems with multiple class preparations, scheduling and other logistics; and (3) perceptual attitudes related to such items as budgetary constraints. These three basic difficulties need to be considered in planning staff development for rural schools. Along with those difficulties are the extremely diverse conditions and needs by groups of rural schools. The very diversity that makes generalizations about rural schools difficult, however, is what must be considered in addressing staff development needs. As suggested earlier, the use of a typology of rural schools may be the best way to address or suggest effective plans for those schools rather than run the risk of tailoring programs that may appear condescending to some and perhaps discriminatory to others (Wood and Kleine, 1987). Wood and Kleine (1987) conclude that the literature on staff development in rural schools "tends to be more prescriptive than empirical and more hortatory than analytical." The literature base is rapidly growing; and, although it still does not provide much support in the design of professional development for rural educators, it does provide some direction and insight about what might be drawn from the larger field of general staff development.

An assumption found in much of the literature is that staff development should be a continuous, systematic effort planned with long-range improvement goals (Eaker & Huffman, 1980; Fullan, 1986; Joyce & Showers, 1988; DuFour & Eaker, 1988; Peter, 1988; Hoover, et al, 1989). The evidence from these sources that "one-shot" attempts to provide lasting, or meaningful, development for

improved teaching is overwhelmingly negative. A recent survey of rural teachers and principals in the Southwest regarding staff development concluded, however, that the episodic type is the most frequent, and sometimes the only, type of staff development provided (Hoover et al, 1989). Lasting effect (actual implementation of the desired outcome) in staff development comes from sustained effort that reflects the basic idea that change is a continuous process not a single event---in teaching like anything else (Hord et al, 1987). The process of change is vitally important and deserves careful consideration in its design in order to produce the desired outcomes.

*Content of Staff Development*

An important element of any effective staff development plan is the content, which should have a sound basis in research (whether empirical or craft-based). Several studies have provided evidence that teachers value the opportunity to stay abreast of current research (Eaker & Huffman, 1980; Knight et al, 1988). An important learning of the literature review of staff development by Joyce and Showers (1988) regarding content was that the focus of the content needed to be narrow to be successful. Failure in staff development was likely to occur when too much was undertaken, training diluted, or content not adequately covered.

The substantive content of staff development sessions is often determined by the intended audience which may be the school district as a whole, a site based school, an individual teacher, or a select group of teachers with a common focus. Joyce and Showers (1988) refer to three spheres of staff development - individual, collective, and systemic. The latter, systemic, is rapidly moving to the forefront of the staff development improvement movement with the underlying assumption that system needs of a school, as a synergistic entity, require staff development that serves the needs of the entire mechanism (Snyder & Anderson, 1986). The matter of choosing the content for a systemic approach to staff development, which may be limited by resources, access, time, and other variables, is not a simple task. Choices such as learning styles, teaching strategies or models, school climate conditions, or technology are topics that overarch all curricular offerings and all grade levels. Ownership from the teachers involved in any development activity or process is not difficult to evoke if the selected content is relevant to their current assignments. Further, if teachers can have a voice in the planning, implementation, and evaluation of the development program it tends to be more effective (Bailey & Crist, 1986; Cooperman, 1985). In spite of the fact that effectiveness of implementation is increased by relevant content, seen as needed by staff, teacher selection or planning of that very development is not occurring as one might conclude.

Administrative support and participation can establish a better context for successful innovation; however, the selection of a positive group of participants also has import to successful innovation. Volunteerism among teachers is one of the most effective measures for continuity and improvement of an innovation (Joyce and Showers, 1988). When volunteer teachers become trainers for staff development purposes, it provides professional growth opportunities for them as well as providing peer collaboration and supervision. The choices to participate in a staff development innovation that teachers make from information about its relevance and application to their assignment have been mentioned already, but bear repetition under context.

*Data Collection and Instrumentation*

In examining contextual variables in a non-controlled environment, constancy must be maintained within the description, protocol of observation, rating and variation of each variable examined. Where statistical operations are analyzed, empirical case study techniques can provide possible explanation and/or comparisons (Yin, 1984).

Eighteen hypotheses were tested in the process of examining data on twenty-four variables related to the context and process of a staff development intervention. Stepwise regression was used to analyze the data. The variables grouped by category were:

Teacher: Lesson plans generated by participating teachers

- Activity logs kept by teachers
- Evaluation of training
- Grade level taught
- Type course taught
- Gender
- Method of selection for the training

Training: Time of day

- Release time provided
- Number of participants
- Administrative participation
- Incentives provided
- Attendance, monthly logs and other records

Trainer: Source of employment

Observation of training

Site: Method of selection

Student population size
Number of teachers and administrators
Ethnic distribution of students
Socio-economic status of students
Distance from institution of higher learning

The data were drawn and analyzed from one year of research, using archival, perceptual, behavioral, and observational data.

*Site selection*

Site selection fit basically into three categories and was dummy coded (categorical, value free coding) as a:

1. self selected site, requested by the administration to participate;
2. nomination by the state department of education, and/or;
3. nomination by an intermediate agency, institution, or person.

Nominated sites were considered according to several criteria: a) administrative cooperation and support specified in a letter to potential participants; b) commitment to the improved teaching of thinking through school goals and the proposed staff development effort; c) logistical match to the representativeness of the region according to ADA size, ethnicity, socio economic status (SES), and geographic location. While there were no controls to assure that the first two criteria were actually present other than verification by the school administration, the other data were authenticated by published school statistical data. Administrative support and commitment, as well as goal match were measured by observational methods (site visits) as well as instrumentation (training evaluations). Figure 1 outlines the number of sites by state.

Figure 1

| State | Number of School Districts | Number of Rural Districts | Demonstration Sites | Student Enrollment Cutoffs |
|---|---|---|---|---|
| Arkansas | 347 | 109 | 6 | 750 |
| Louisiana | 66 | 32 | 2 | 2,500 |
| New Mexico | 88 | 52 | 4 | 500 |
| Oklahoma | 613 | 137 | 8 | 800 |
| Texas | 1,061 | 863 | 10 | 1,600 |

Letters were sent to seventy-four schools in the five states involved in the research. During the research, school supplied archival data, which were verified by published statistical data (ie.state documents and annual reports from public record), and direct contact through telephone or on-site interviews.

*Site-based data*

The data sets relating to the sites are described below. The site data sets used in the analysis and their codes were:

a. sites were coded with three digits representing state and site to assure anonymity (101,102, etc.);
b. student population (ADA) as reported for funding purposes;
c. total faculty for the school site;
d. number of administrators in the district;
e. ethnicity by percent of each by code:
    1= high, over 52% minority
    2= medium, 25-51%
    3= low, less than 25%
    9= unknown or conflicting data received;
f. socio-economic status(SES), a quantitative figure, student population eligible for free or reduced lunch;
g. distance from an institution of higher education providing professional growth opportunities for educators, coded by category as:

1= less than 50 miles
2= 51-100 miles
3= 101-150 miles
4= over 150 miles

h. mini survey of school effectiveness, survey of all participants in the training at each site. The mean average a the site was used for all teachers at that site in computing the implementation formula as a measure of their perception of instructional focus. (Possible range of 0, absent, to 5, strong).

*Findings*

The purpose of this research study was to provide a predictive equation of rural school context variable that support staff development for school improvement and to provide an empirical study of a large scale rural intervention. The research sought to verify or define contextual variable in diverse rural schools representing a broad spectrum of types and populations st that context found to be most supportive to a staff development intervention for improvement could be described.

This study demonstrated that a number of contextual variables, related to teachers, school, training, and trainers, have a correlated effect on the rate of teacher implementation of new or improved strategies and behaviors as a result of training. The identification, description, and relationship of predictive contextual elements found to be supportive of such efforts has significant value to those involved in school improvement efforts in rural contexts. Stepwise Regression Procedures performed in this study found predictor variables to contribute 56.9 percent of the explanation of the model. The eight variables found to be significant and have impact on rural training were:

1. Training time during the school day
2. The number of students eligible for free or reduced lunch (SES)
3. Administrative participation
4. Nearness to an institution of higher education
5. Incentive is provided
6. High school level teachers
7. Number of administrators in district
8. Trainer from Institute of Higher Education (IHE)

The regression equation to predict the criterion from predictor variables was established as follows:

Y= a + b1 x1 + b2 x2 +bn xn .

Y= teacher implementation

b1 b2 bn -partial regression coefficients

By examining the B values' percentage of contribution to the model, it is clear which predictor variables contributed the most in explaining the prediction. Each category (vector) of every qualitative predictor was considered as a separate predictor for highest accuracy in the prediction model. Figure 2 defines the vector table.

Figure 2

Definition of Vectors Table

| | |
|---|---|
| V1= | administrative participation |
| V2= | incentive provided |
| V11= | training time during school time |
| V25= | trainer (IHE) |
| V39= | ADA over 52% ethnic minority population |

From the Stepwise procedures, Step 8 was accepted as the model to be analyzed for recommendation since the variables combined explain/predict 56.94 percent of the implementation rate. Figure 3 delineates the Stepwise Regression Step 8 results.

Figure 3
Stepwise Regression Step 8 Table

| | B Value | F | Prob>F |
|---|---|---|---|
| Intercept | 60.059 | | |
| V1 | 22.954 | 47.49 | 0.0001 |
| V7 | 22.267 | 40.83 | 0.0001 |
| V11 | 42.017 | 235.49 | 0.0001 |
| V25 | -21.918 | 34.12 | 0.0001 |
| V39 | -13.125 | 20.67 | 0.0001 |
| Mi Col | -14.479 | 41.83 | 0.0001 |
| SES | 0.042 | 90.63 | 0.0001 |
| Admin | -3.019 | 17.59 | 0.0001 |

R Square= 0.5694
r= .75

*Discussion of the implications*

Training time during the school day

The significance of the first variable, training time during the school day, is the cost factor involved. When planning for staff development, administrative decisions about budget are pertinent. Costs escalate rapidly when substitute cost is necessary for systematic staff development. Alternative ways to release teachers during the day for training are needed if administrators are to heed this predictor. A difficult variable to provide, this predictor had great importance in the model. Although it is a costly way to provide staff development, the cost benefits must be considered if implementation is to occur.

Number of students eligible for free/reduced lunch (SES)

The number of students from a low SES category was a relevant predictor of implementation of training. In this case, the higher the SES number, the higher the implementation recorded. Observations and soft data concerning the sites where

high poverty was present, and the trend of increased attention to "at-risk" students who are represented frequently in groups high is SES percentages such as these lead to the conclusion that this factor deserves additional attention. With the conclusion that teachers had a higher rate of implementation at sites where there was a high SES indicator, the number of students eligible for free or reduced lunch (SES) as a stimulator of implementation is perhaps most easily explained in light of recent focus on high risk populations of students who are frequently also in the poverty ranks. As teachers seek additional strategies for efficacy, it fits that those in schools with high percentages of these students would participate fully in staff development.

The reasons for the importance of this variable other than professional concern for the learners are yet to be adequately described. Since the size of student population of a school did not influence the rate of implementation of improved teaching strategies significantly, one might conclude that socio economic description of the student body is more important than its size.

### Administrative participation

One of the strongly recommended features of effective staff development from the literature and research in nonrural settings, this variable was strongly supported by the data in this study. In sites where self-nomination/selection to participate in the project occurred implementation was also high. The importance of this variable was strongly expected, when two sites that began the project did not continue because of substantive administrative changes that affected support and commitment to the effort. As mentioned in the literature review, rural situations with small numbers of administrators are more strongly influenced by this variable either positively or negatively.

### Nearness to an institution of higher education

Teachers in schools within fifty miles of an institution providing professional growth opportunities were shown to have a higher teacher implementation rate than those further away. The regression indicated that the closer to an IHE, the higher the implementation rate was at a school. This may have several explanations not proved here, but deduced. Considering that another high predictor was the trainer from an IHE, there may be an interrelatedness not discovered by these data. Nearness to an institution of higher education and a trainer from such an institution certainly must be correlated; however, even more information may be related to these two factors as being important contributors to the prediction of high implementation.

The possible incentive represented by college credit, advanced or additional certification, or advancement on career ladders as a result of such activity all support this situation. An added occurrence in the intervention was possible extra technical assistance available by this variable. Possible influence of three variables (i.e. trainer, nearness of IHE, and related incentives), especially when all were present at a site could certainly have had a significant effect. An extensive study of participants at sites near IHE's might reveal answers not found here (i.e. work on advance credit that relates to the training, or advance certification in a related area).

Incentive is provided

Not unexpected results based on existing data from other settings, the evidence of an incentive such as a stipend, career ladder advancement, college credit, even release time as predictive of higher implementation rates in rural schools was like that in nonrural counterparts. Indicative of teacher willingness to put extra time and effort into a project when an incentive is offered should stimulate a search for ways to provide these as motivators for implementation.

High school level teachers

A strong indicator, this variable presents the possible implication of the value of piloting implementation projects with this level of teachers for higher success rates. The factor that implementation was higher among high school level teachers was not surprising when considering the content for the training (higher level thinking). Although the intervention was designed for all levels and all disciplines, the attention and relatedness to higher level thinking was associated frequently with older students and content related courses from the onset of the project. The experience and training of secondary teachers has been traditionally heavier in the area of critical thinking that it has been for elementary teachers. A correlation between the training content and other variables was not within the scope of the study, but might prove interesting and explanatory.

Although the study revealed that the higher the grade level of the teacher the higher the rate of implementation was, it did not investigate the relationship of the content to the implementation. Before a generalization is made about this level as an exclusive target audience, further study of the relation of the type of course taught to the content of the training should be accomplished.

Number of administrators in district

The regression indicated that as implementation increased, the number of administrators involved decreased. The Pearson correlation showed moderate correlations between administrator number and the mini-survey (-0.33144), participants (0.39785), and incentive (0.35587), but none of these explain the negative correlation.

As a predictor, the number of administrators in the district seemed difficult to understand at first. As case analysis was used, a relation to numbers of special programs with special directors or administrators seemed difficult to determine. It is likely, but not substantiated by the date, that the more special programs and administrators there are in a small district, the more segmented the instructional focus and interaction of the faculty members. If this is the case, those administrators and programs by sheer existence would not be conducive to implementation of a whole faculty effort. The negative relationship of more administrators and lower implementation may also be indicative of lack of clear support or administrative attendance to the training.

Trainer from IHE

This variable had some moderately high correlations with other variables (i.e. participant, 0.39646 and selection of site, 0.34093 both at the $P > 0.0001$ level). Some of the highest correlations, however, occurred between selection of teachers and training observed (o.47664 and 0.46178), also with acceptable probability levels of $P > 0.0001$. Because of the interrelatedness of these other variables, further study of this variable is recommended before generalizations are made. One of the limitations mentioned early in this study was the element of multiple trainers to deliver the training. Style, rapport with participants, experience with the content of the training are variables that were beyond the control of the project, yet could have had possible effect on outcomes. For the purposes of this study, Step 8 in the Stepwise Regression Procedure was selected because of its high rate of explanation with an acceptable significance level for all predictors. For replication purposes, to prescribe possible implications for this study as applied to a specific school preparing for an improvement intervention, further steps might have additive benefits with each successive step.

The analysis of outliers provided limited substantive conclusions. While this was a hope for source of information, it, too, may have been asking too much from a well used data base. Additional data treatments with other statistical procedures might provide further understandings of these deviations

*Conclusion*

While definition of a predictable, supportive context for rural school improvement through staff development was the primary purpose of this study, the work provides a basic foundation of research for similar interventions that can be used to assist rural schools to design improvement through staff development with high implementation expected. Application of the prediction equation presented here, extended beyond Step 8 according to site-specific needs or prescription might be the recommended.

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38. Peggy McIntosh, Feeling Like A Fraud Paper" 18, Wellesley College, 1985, 3.

39. Ibid.

40. Phelps, 30.

41. Dweck, 1046.

42. Theodore Sizer, Ohio Assoication of Independent Schools, Salt Fork Conferences, September 25-26, 1983.